UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,388	06/01/2007	Masanobu Kawazoe	DK-US065246	9309

22919 7590 12/18/2009

GLOBAL IP COUNSELORS, LLP
1233 20TH STREET, NW, SUITE 700
WASHINGTON, DC 20036-2680

EXAMINER	
VAN OUDENAREN, SARAH A	
ART UNIT	PAPER NUMBER
1793	
MAIL DATE	DELIVERY MODE
12/18/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,388	KAWAZOE ET AL.	
	Examiner	Art Unit	
	SARAH VAN OUDENAREN	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 9-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/28/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-5, 8, 10, 11, 14, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al (US 5,462,817) in view of Yoichi et al (JP 2003-059521).

Hsu teaches a high temperature electrochemical converter and specifically related to high performance systems employing such devices. Hsu teaches that electrochemical converters perform fuel-to-electricity conversions in a fuel cell (col 1, lines 15-25). The system facilitates the heat transfer from the fuel cell stacks (col 2 line 5-10) and is typically used in systems with operating temperatures around 1000°C (col 1, lines30-40). Hsu teaches fuel and oxidizers being supplied to the stack (col 5, lines 20-50) as well as using solid oxide material (col 5, lines 50-65). A burner is used to burn the spent gases from the converter within the thermal enclosure to provide additional energy (col 8, lines 1-10, Figure 7). Hsu teaches two loops within the system. The first loop acting as a fuel cell loop performs reactant processing, thermal regeneration, and fuel cell operations. The second loop includes the heat transfer elements. The gas in both loops being a working medium. The mass flow rate of the working medium is regulated to a level which can absorb the radiatively transferred waste heat from the fuel cell stack and achieve a large temperature rise which is favorable from a thermodynamic efficiency standpoint (col 8, lines 20-65).

Hsu does not explicitly teach a branching part.

Yoichi teaches a SOFC wherein a bypass line may be used when the temperature of the oxidizing agent heated by the recuperator is higher than the temperature which the SOFC needs, said bypass line can lower the temperature of the oxidizing agent (see figure 8 and paragraph 63).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the branching of Yoichi with the system of Hsu as it is clearly known in the art that passages diverging from the heat recovery passage are provided for optimizing the temperature of a reaction gas fed to the fuel cell based on the temperature of the fuel cell.

Regarding claim 2, Hsu does not explicitly teach a branching part.

Yoichi teaches a SOFC wherein a bypass line may be used when the temperature of the oxidizing agent heated by the recuperator is higher than the temperature which the SOFC needs, said bypass line can lower the temperature of the oxidizing agent (see figure 8 and paragraph 63).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the branching of Yoichi with the system of Hsu as it is clearly known in the art that passages diverging from the heat recovery passage are provided for optimizing the temperature of a reaction gas fed to the fuel cell based on the temperature of the fuel cell. It is seen in Yoichi that the diverging is done as a response to conditions of the SOFC and a ratio is affected.

Regarding claims 3 and 9, Hsu teaches that radiation heat transfer helps to maintain a uniform temperature distribution over the cell stack (col 5, lines 1-5). It would have been obvious to one of ordinary skill in the art at the time of the invention to facilitate the heat transfer loop across a plurality of layers in order to maintain a uniform temperature distribution.

Regarding claims 4, 10, and 14, Hsu teaches a burner is used to burn the spent gases from the converter within the thermal enclosure to provide additional energy (col 8, lines 1-10, Figure 7). Hsu teaches that maximizing the heat exchange between the incoming and outgoing gases would decrease the amount of heat lost by the system, thereby improving the overall system efficiency (col 6, lines 30-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to exchange heat with the burned waste gas in order to decrease the amount of heat lost by the system, thereby improving the overall system efficiency.

Regarding claims 5, 11, and 15, Hsu teaches a burner is used to burn the spent gases from the converter within the thermal enclosure to provide additional energy (col 8, lines 1-10, Figure 7). It would have been obvious to one of ordinary skill in the art at the time of the invention to include this within the cell in order to decrease heat loss and maximize radiant heating.

Regarding claim 8, Hsu teaches a system as discussed above. Hsu teaches that the medium can be water, steam, gas or a variety of two-phase fluids (col 5, lines 1-5). It would have been obvious to one of ordinary skill in the art at the time of the invention

to manipulate the gas in order to further control the heat exchange while utilizing a more inexpensive component of the system.

Claims 6-7, 12-13, 16-17, 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al (US 5,462,817) in view of Yoichi et al (JP 2003-059521) as applied to claim 1 above and further as modified by Sato et al (US 2004/0062961).

Regarding claims 6, 12, 16, 18 Hsu teaches a high temperature electrochemical converter and specifically related to high performance systems employing such devices as discussed above. Hsu teaches a fuel supply being fed via heat exchangers wherein heat is exchanged and generates steam from water (col 7, lines 55- col 8, line 10).

Hsu does not explicitly teach a vaporizer.

Sato teaches a vaporizer configured to vaporize the fuel of a fuel cell system. The fuel containing liquid, such as water, is vaporized by being heated and becomes gas fuel with a certain composition (pg 2, paragraph 28). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the vaporizer of Sato with the system of Hsu in order to obtain a gas fuel with a certain composition. Sato teaches the vaporizer is under a thermal insulator and among other components of the system within a module in order to promote thermal efficiency. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the proximity of Sato with the system of Hsu in order to promote thermal efficiency.

Regarding claims 7, 13, 17, and 19 Sato teaches the vaporizer is under a thermal insulator and among other components of the system within a module in order to

promote thermal efficiency. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the proximity of Sato with the system of Hsu in order to promote thermal efficiency.

Response to Arguments

Applicant's arguments with respect to claims 1-7, 9-19 have been considered but are moot in view of the new ground(s) of rejection set forth above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SARAH VAN OUDENAREN whose telephone number is (571)270-5838. The examiner can normally be reached on Monday-Thursday, 9:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melvin Curtis Mayes can be reached on 571-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SARAH VAN OUDENAREN/
Examiner, Art Unit 1793
December 14, 2009

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1793